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Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be nor susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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Notice

Due to the critical shortage of medical officers, the Chief, Bureau of Medicine and Surgery, has recommended, and the Chief of Naval Personnel has concurred, that Reserve medical officers now on active duty who desire to submit requests for extension of their active duty for a period of three months or more will be given favorable consideration

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Residency Training in the Navy

Applications for residency training are requested from Regular officers and those Reserve officers who have completed their obligated service under the Universal Military Training and Service Act, as amended. Reserve officers with obligated service may become eligible for training upon transfer to the Regular Navy.

Training is available for Regular officers in all of the major medical specialties. It is available for Reserve officers in Pathology, Orthopedic Surgery, Obstetrics and Gynecology, Pediatrics, Urology, Anesthesiology, Otolaryngology, Dermatology and Syphilology, Ophthalmology, and Internal Medicine.

Members of the current intern class who are eligible and have been accepted for training may start their residency immediately on completion of their internship. It is now the desire of the Bureau of Medicine and Surgery to continue a resident in training without interruption until he has completed the formal training requirements leading to certification by an American Specialty Board. This procedure will be strictly adhered to in every case where the demands of the service permit, and providing the officer shows satisfactory progress. (ProfDiv, BuMed)

Effects of High-Yield Nuclear Explosions

(Conclusion of article appearing in Medical News Letter, 1 April 1955,  
Vol. 25, No. 7)

In an area of heavy fallout the greatest radiological hazard is that of exposure to external radiation. Simple precautionary measures can greatly reduce the hazard to life. Exposure can be reduced by taking shelter and by utilizing simple decontamination measures until such times as persons can leave the area. Test data indicate that the radiation level, i. e., the rate of exposure, indoors on the first floor of an ordinary frame house in a fallout area would be about one-half the level out of doors. Even greater protection would be afforded by a brick or stone house. Taking shelter in the basement of an average residence would reduce the radiation level to about one-tenth that experienced out of doors. Shelter in an old-fashioned cyclone cellar, with a covering of earth three feet thick, would reduce the radiation level to about 1/5000, or down to a level completely safe, in even the most heavily contaminated area.

Radioactive material deposited during fallout may or may not be visible but would be revealed by radiation detection instruments such as Geiger counters. Any falling dust or ash that can be seen down-wind within a few hours after a nuclear explosion should be regarded as radioactive until measured by a radiation detection instrument and found to be harmless.

Care should be taken to avoid the use of solid foods or liquids that may contain fallout particles.

If fallout particles come into contact with the skin, hair, or clothing, prompt decontamination precautions such as have been outlined by the Federal Civil Defense Administration will greatly reduce the danger. These include such simple measures as thorough bathing of exposed parts of the body and a change of clothing.

If persons in a heavy fallout area heeded warning or notification of an attack and evacuated the area or availed themselves of adequate protective measures, the percentage of fatalities would be greatly reduced even in the zone of heaviest fallout.

Several basic facts should be kept in mind in evaluating the hazard from fallout radiation. First, radiation is not a new phenomenon created by the explosions of fission and thermonuclear weapons. Cosmic rays from space constantly pass through our bodies. We are exposed to "background" radiation from radium and radon in the soil, water, and air. Our bodies have always contained naturally radioactive potassium and carbon.

Detonations of all atomic weapons produce radioactivity, a portion of which is carried to high altitudes and over great distances in the form

of fine particles. The percentage of this radioactivity which travels beyond the relatively near area of the explosion depends largely on the conditions under which the bomb is fired, the percentage being higher for in-the-air bursts where the fireball does not touch the earth's surface. The most widespread radioactivity is produced only by the longer-lived fission products, because the radioactivity of the shorter-lived products decays and disappears before the particles come down to earth in a matter of days, weeks, months, and even years. The longer-lived radioactive products may be distributed over the entire earth. However, as the particles are carried farther and farther to remote areas, the possibility of significant amounts of fallout decreases.

One of the most biologically important radioactive substances found in fallout is strontium-90. It has a long lifetime--nearly 30 years on the average. Radiostrontium has a chemical similarity to calcium and, therefore, when taken into the body it has a tendency to collect in the bones. Radiostrontium can enter the body in two ways--by inhaling or by swallowing. Normally, the amount inhaled would be small compared with the amount one might swallow. Fallout material deposited directly on edible parts of plants may be eaten along with the plants, but washing the plants before they are eaten would remove most of this radioactive material. However, rainfall carrying the radiostrontium down to earth may deposit it in the soil where it can be taken up, in part, by plants and incorporated into plant tissues, later to be eaten by humans or by grazing animals which, in turn, provide food for humans.

Since the start of nuclear tests, careful measurements have been made of the distribution of radiostrontium over the earth's surface, in the soils, in plants, and animal tissues, in the oceans, in rain, in the atmosphere and in all forms in which it might be expected to occur. The results of this study are reassuring. The amount of radiostrontium now present in the soil as a result of all nuclear explosions to date would have to be increased many thousand times before any effect on humans would be noticeable.

Among the shorter-lived fission products involved in the study of internal radiation, the most biologically important is radioiodine-131 with an average life of only 11.5 days. Even though this product may be widely spread after a nuclear explosion, the possibility of serious hazard is limited by its relatively short life. Like the non-radioactive form of the element, it concentrates in the thyroid gland and, in excessive quantity, conceivably could damage the thyroid cells.

Scientists of the Atomic Energy Commission have estimated that the average exposure of people in the United States from radioiodine in the fallout from the entire series of tests in the spring of 1954 was only a few percent of the annual dose that can be received year after year and still have no noticeable effects.

These two isotopes--radiostrontium and radioiodine--constitute the principal internal hazards from the radioactivities produced by the detonations of atomic weapons, both fission and thermonuclear. Any accumulation of these materials can be detected with great sensitivity so that ample warning of potential hazard could be given long before any actual danger occurred from test detonations. The amounts of radiostrontium and radioiodine which have fallen outside the areas near the test sites as a result of all atomic tests up to now are insignificant compared to concentrations that would be considered hazardous to health.

One other effect of radiation must be considered in evaluating the long-range possibilities of hazard from nuclear detonations. This is the possible genetic effect upon the germ cells which transmit inherited characteristics from one generation to another. At our present stage of genetic knowledge, there is a rather wide range of admissible opinion on this subject.

In general, the total amount of radiation received by residents of the United States from all nuclear detonations to date, including the Russian and British tests and all of our own tests in the United States and the Pacific, has been about one-tenth of one roentgen. This is only about 1/100th of the average radiation exposure inevitably received from natural causes by a person during his or her reproductive lifetime. It is about the same as the exposure received from one chest x-ray.

The medical and biological advisers of the Atomic Energy Commission believe that the small amount of additional exposure of the general population of the United States from our nuclear weapons testing program will not seriously affect the genetic constitution of human beings.

In the event of war involving the use of atomic weapons, the fallout from large nuclear bombs exploded on or near the surface would create serious hazards to civilian populations in large areas outside the target zones. However, as mentioned in the foregoing Report, there are many simple and highly effective precautionary measures which must be taken by individuals to reduce casualties to a minimum outside the immediate area of complete or near-complete destruction by blast and heat. Many of these protective measures, such as shelter and decontamination procedures, have been detailed by the Federal Civil Defense Administration. (U. S. Atomic Energy Commission)

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Please forward requests for change of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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### Tracheal and Bronchial Grafts

An extensive literature has already accrued relating to reconstructive surgery of the tracheobronchial tree. At the present time, the authors believe that there are several indications for considering the application of grafts upon the trachea or bronchus. There are three basic categories: (1) acute trauma; (2) various types of bronchostenosis, both tuberculous and nontuberculous; and (3) management of various types of different neoplastic processes. Later, there may be added (4) congenital defects, such as partial agenesis of cartilage. Gebauer and Paulson have emphasized that, in some instances, strictures need not be associated with suppurative destruction of the pulmonary tissue distal to the stricture. In such instances, a repair of the stricture constitutes the only reasonable physiologic surgical approach. The third category, namely that of neoplastic processes, includes several subsidiary divisions. Any type of neoplasm involving the trachea itself allows one but little choice except to utilize some type of graft, or graft plus prosthesis. In fact, it was a tracheal tumor, which had been observed to exist for over two years, which incited Daniel's initial interest in this problem. Both primary carcinomas and adenomas of the trachea and bronchial wall have been managed in this manner. The authors have had opportunity to utilize this approach in the management of a large bronchogenic cyst arising from the posterior tracheal wall. It has also been used in order to resect a more adequate margin of bronchial or tracheal tissue adjacent to neoplasms. Grafts have been used to reconstruct major defects produced by resection of the carina, tracheal wall, and contralateral bronchial wall produced by radical right total pneumonectomy for carcinomas arising in the region of the right upper lobe orifice. Finally, the authors have found a very definite usefulness of the bronchial graft principle in the management of carcinomas arising in the hilar area of a pulmonary lobe in patients whose respiratory capacity is insufficient to allow any more extensive resectional procedure than lobectomy.

At the present time, the authors have had opportunity to employ grafting procedures in ten nontuberculous patients. Certain fundamental problems have been brought forward by experiences in this field. The first is whether the procedure is justified. The experience of the authors indicates that it is fully justified in all the circumstances initially set down, with the reservation of some doubt about its justification in extensive right upper lobe carcinomas which have invaded beyond and across the carina. The authors believe that, despite the present major complication and minimal palliation rate, outlined in their experience with these lesions, an open mind should be kept. Further investigative experiences of laboratory and clinical types should be studied. The authors' impression was, that if they insist upon a more adequate width of graft and the firmer support

presented by No. 24 silver wire, some of the complications, inherent in the placement of massive grafts in the reconstruction of cartilaginous areas of the tracheobronchial wall, will be eradicated. A distinct problem remains in regard to how large a graft one can place before too high an incidence of partial necrosis and fistula is produced. At present, the authors are of the opinion that grafts 5 cm. in length, and 2.5 cm. in width have been proved to survive, while those over 5 cm. in length, with a width of 3 cm. or greater, stand a high chance of local necrosis. Therefore, in the larger grafts, an underlying prosthesis should be utilized. The exact type of prosthesis is not as yet defined but their present trend is toward a specially constructed and perforated polyethylene tube.

The problem of the need of postoperative tracheotomy is also an important question. Certainly, there is some benefit in decreasing the pressure produced upon the suture line by cough with the closed glottis and intact cervical tracheal wall. The tracheotomy does distinctly introduce a certain hazard of potential infection of the graft and restricts the normal humidification of the tracheobronchial airway. The authors believe that the need for tracheotomy is an individual factor to be determined by graft size, the presence or absence of a prosthesis, and the suppurative aspect of the patient's tracheobronchial tree.

Initial experiences with the employment of grafts in children suggest strongly that small or moderate-sized grafts will grow. One would fear the use of grafts larger than 3 by 1.5 cm. in the younger age group. Further observation and study, particularly with experimental investigation, are needed to define the fate of grafts placed in infancy or childhood.

A further important problem is the consideration of bringing an adequate blood supply to the base of large grafts. Graft survival requirements imply restrictions produced by dimensions and by the blood supply of the remaining strand of tracheobronchial tissue to which it is attached. It would seem reasonable to hope that a fairly vascular, pedical type, pleural-fat graft, placed directly upon the base of the transplanted dermis, might decrease tendencies to local necrosis of the graft substance. (Abbott, O. A., Van Fleit, W. E., Roberto, A. E., Experiences with Extending the Indications for the Use of Tracheal and Bronchial Grafts: J. Thoracic Surg., 29: 217-236, March 1955)

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#### Pyribenzamine as an Analgesic Agent in Regional Anesthesia

The introduction of antihistamines for regional anesthesia is warranted if they possess advantages over those known anesthetic agents usually

employed. In addition, they should lack the undesirable side effects of the conventional agents. Both laboratory and clinical research must prove their superiority. This preliminary report proposes to review the pharmacology and laboratory reports and to present the authors' observations in a series of cases in which the specific antihistamine (pyribenzamine), was used in local and regional anesthesia for surgical procedures, and in diagnostic and therapeutic nerve blocking.

Pyribenzamine solution, 1%, was used in the production of 329 diagnostic and therapeutic nerve blocks on 125 patients seen in the Nerve Block Clinic over a period of 6 months. These nerve blocks were tried on all patients referred from the Outpatient Department, or hospitalized, unless the referring physician refused permission for the use of a "new" drug. Because of the sedative properties noted by investigators of the antihistamines, no preliminary barbiturate was given to the patients. No toxic reactions, as evidenced by stimulation of the central nervous system, and occasionally seen with procaine or other related anesthetic solutions, were present. Several patients who had been having nerve blocks with procaine solution before the study was begun, and who now were given pyribenzamine, were asked whether they noticed any difference in the "injections." Two patients, who had previously reported so-called "jags," stated that they felt drowsy after the injection. New patients also reported this drowsy effect. None had any excitation symptoms. Two cases of stellate ganglion nerve block and three of obturator nerve block, were classed as failures because the patients did not obtain relief of pain. It was thought that failure was the result of errors of technique rather than ineffectiveness of the drug used, particularly in the former group of patients, because subsequent blocking at a later visit produced therapeutic effects.

The anesthetic effect apparently was immediate, and was indicated in the patients having stellate ganglion blocks by the production of a Horner's syndrome and in those having suprascapular blocks by the immediate increase in range of motion of the extremity. The volume of solution used in these procedures was reduced after the initial use as its marked effectiveness was noted. There was no evidence of local tissue injury in those patients who had repeated blocks.

One hundred patients who were scheduled for operative procedures under local anesthesia were given injections of pyribenzamine solution, 1%, at the site of operation. Anesthesia was successful in every case, and in none were there any toxic signs, sometimes observed with procaine or related drugs. Although no attempt was made to limit the amount of solution employed, the surgeon was advised to use smaller amounts because the drug had greater potency than procaine.

The literature on the antihistaminic substance, pyribenzamine 1% solution, has been reviewed for its local anesthetic action. It was found

in the laboratory studies, to have not only marked anesthetic properties but an anesthetic potency about 2.2 times as great as procaine. The authors' clinical findings corroborated the results of pharmacologic experiments and other clinical studies.

Studies on human volunteers demonstrated that pyribenzamine produced anesthesia in the intradermal wheal at least four times as long as with procaine solution. When epinephrine, 1:100,000, was added to both solutions, the duration of action was over four times as long. Pyribenzamine has the advantages of rapid onset of anesthesia, profoundness, and apparently, low toxicity by virtue of the use of smaller amounts than necessary when procaine is employed. Evidence of stimulation of the central nervous system was detected in only one patient. The frequent finding of drowsiness increased the effectiveness of pyribenzamine as an analgesic agent.

Pyribenzamine was used for local infiltration and regional nerve block for diagnostic, therapeutic, and surgical procedures in 459 cases. All injections resulted in a rapid onset of action, longer duration of action, a higher percentage of success in regional nerve blocking and a smaller number of systemic reactions. There were indications of some burning, occasional bleeding, erythema at the site of injection, and possibly increased oozing which may have been due to increased vascularity, or "spreading" ability of the drug, or both. Complete recovery was noted in all patients.

The clinical experience of the authors seemingly indicates that pyribenzamine may be a drug of useful local anesthetic action which is not only more potent but relatively less toxic than procaine. These findings encourage further clinical investigation of this drug for its local anesthetic usefulness. (Betcher, A. M. and Tang, Z. T., Pyribenzamine: Evaluation of Effectiveness as an Analgesic Agent in Regional Anesthesia: *Anesthesiology*, 16: 214-223, March 1955)

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#### Primary Cancer of the Liver

Primary cancer of the liver is a difficult diagnostic problem. A careful history and physical examination are of the utmost importance, inasmuch as study of the present series indicates that there is no clear-cut, classical, clinical picture which identifies the condition at first glance. An early suspicion of the disease, based on the pertinent findings in history and physical examination, is essential if the diagnosis is to be established at an early stage when some therapy might be valuable. Any symptoms which might suggest this disease should be emphasized; the 56 patients in this series had 96 chief complaints.

The four commonest chief complaints, any one of which should immediately raise suspicion of primary cancer of the liver, were: (1) unexplained pain in the abdomen; (2) vague gastrointestinal dysfunction; (3) otherwise unexplained abdominal distention or an abdominal mass; and (4) unexplained chest pain.

Weight loss, particularly if combined with any of the foregoing complaints, should be considered suspicious of cancer of the liver. A history of weight loss was found in 87.2% of the patients, ranging from 6 to 100 pounds, and averaging 30.7 pounds. In two-thirds of the patients, there was evidence of weight loss on physical examination.

A change in the color of the urine was reported by 95% of the patients, and should be a further aid in establishing this diagnosis.

A visible or palpable mass, detected by the patient, is an extremely important feature in leading to the diagnosis because the liver was palpable in 90% of this series. In one-half of these patients, it was smooth and in one-half it was nodular, so that the character of the liver edge could not be diagnostic in itself. Liver tenderness and evidences of portal obstruction, found in slightly over one-half of the patients, should be of some diagnostic assistance.

Abdominal pain was the chief complaint of 41 patients and, therefore, was the most frequent chief complaint in the study. Pain was variously localized to all parts of the abdomen and even to the chest.

Peripheral edema, change in the stool color, and nausea and vomiting each occurred in over 50% of the patients, and therefore, should be noted with care.

Primary cancer of the liver is usually thought to be associated with cirrhosis. The surprisingly low incidence of only 3 patients in this series, who had a previous diagnosis of cirrhosis, is worthy of comment. The over-all incidence of cirrhosis was likewise unusually low, and is considered in detail in the article. Less than one-half of the patients had an alcoholic history; this cannot be considered of major importance in the present series. Jaundice, an important factor in any condition where liver disease is suspected, was noted in approximately two-thirds of the patients.

Temperature elevation has frequently been considered characteristic of primary cancer of the liver. In the 9 patients where this could be evaluated during a minimal two-week hospitalization prior to any operative procedure, 4 had almost daily spikes ranging from 99 to 103, while 5 had normal temperatures. Thus, temperature elevation was not a constant finding.

The duration of complaints ranged from 2 days to 4 years, with 7 patients having symptoms for more than one year. The median duration of symptoms was 2 months.

Gastrointestinal x-ray studies should be used extensively in such perplexing clinical problems. Fourteen patients had both upper gastrointestinal

series and a barium enema, and 11 patients had cholecystograms. Even though these studies may not give a diagnosis, entirely negative results may help to point to a diagnosis by exclusion.

This is predominantly a disease of males. It affects both white and Negro. The history can be as varied as any in medicine, particularly in the earlier stages. Neither an alcoholic, a cirrhotic, nor a syphilitic history is necessary. Liver function tests may show only the slightest deviation from the normal, and hematologic studies, in general, will tend to be within normal limits, even in the presence of extensive hepatic pathology. Properly taken x-ray films of both the upper and lower gastrointestinal tract, with emphasis on displacement of the bowel by an extrinsic mass, should be a leading clue to the presence of intrahepatic pathology.

In these patients, if some earlier exploratory procedure, whether it be peritoneoscopy, liver biopsy, or exploratory laparotomy, could be done, then a greater percentage of diagnoses will be established at a time when there may be some hope, and before the patients have been exposed to unduly long diagnostic surveys. If it be remembered that only a careful survey and an early diagnostic exploration can offer a better prognosis, then future studies can hope to show longer survivals. (Cohn, I. Jr., and St. Raymond, A. H., Jr., Primary Cancer of the Liver: *Surgery*, 37: 356-368, March 1955)

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#### Hodgkin's Disease and Allergy

The etiology of Hodgkin's disease is unknown. Considerable investigation has resulted in many opinions, i. e., viral etiology, bacterial causation, a true neoplasm, or tissue changes caused by a hyperimmune reaction. The patient with Hodgkin's disease is usually in the second to fourth decade of life and without known predisposing factors in the heredity, environment, diet, occupation, or previous diseases. One of the authors, on questioning many patients with Hodgkin's disease, gained the impression that the incidence of allergy was higher than one would expect in such a random group. The intractable pruritus that often accompanies Hodgkin's disease, the occasional eosinophilia of the peripheral blood and its prominence as a tissue component, and a proneness to urticaria, also are suggestive of an allergic element in the disease.

Therefore, it was decided to obtain data concerning the allergic state from 200 patients with Hodgkin's disease regardless of the histological type (paragranuloma, granuloma, sarcoma) or of age group. A questionnaire was used. Because some patients voluntarily commented that taking alcoholic beverages caused immediate pain or discomfort in the region of enlarged nodes, a question concerning this was included. The patients were

also asked about their smoking habits and whether smoking caused pain or discomfort. The authors recorded the number of upper respiratory infections which these patients had each year. Then the charts of the patients were reviewed in reference to the eosinophil percent level in the differential white blood count in every available instance.

The allergic history in patients with Hodgkin's disease has been reported infrequently in the literature. The interpretation of the allergic state is not uniform. Certain investigators consider only hay fever, asthma, urticaria, and angioneurotic edema as manifestations of this state. Others accept as equivalent a variety of syndromes in the upper respiratory, cutaneous, gastrointestinal, ocular, and genitourinary systems, as well as migraine and epilepsy. The questionnaires were limited to the so-called major allergies, i. e., seasonal or perennial hay fever, asthma, chronic recurring urticaria, angioneurotic edema, and eczema. The authors, however, recorded as minor allergy, such signs as occasional urticaria and rash after ingestion of certain foods. The allergic family history was limited to direct antecedents, i. e., the parents and grandparents.

Among 200 patients questioned, 26 (13%) had major allergy. Of the 26 patients with major allergy, 12 had hay fever; one, asthma; one, eczema; 3, hay fever and asthma combined; 4, hay fever and urticaria; one, asthma and urticaria; one, urticaria and angioneurotic edema; 2, hay fever and eczema; and one had hay fever, asthma, and urticaria. Of the 200 patients, 47 (23.5%) gave a history of minor allergy. Many of the patients with major allergy gave a history of minor allergy as well.

A total of 193 Hodgkin's disease patients were questioned concerning allergy in their family history, namely the parents and grandparents. Forty (20.7%) gave a positive family history. A total of 197 patients were questioned whether there was any untoward reaction, such as pain or distress in the region of the lymph nodes or involved tissues when alcoholic beverages were consumed. Seventeen (8.6%) gave a positive history in this regard. Two of the 197 patients said that tobacco tended to cause pain or increased their discomfort in the region of enlarged nodes. Twenty-two (11.5%) of 190 patients with Hodgkin's disease had more than three colds a year. With respect to the eosinophil differential count, the patients were divided into various groups; 7%, or more, was taken to be abnormal. Seventy-three patients had no increase in their eosinophil percentage on one or more counts. Seventy of these patients had roentgen-ray therapy at one time or another. There were 50 patients whose counts were usually normal, but on one or more occasions an increase in the eosinophil differential was noted. Of these 50, only one had not had roentgen-ray therapy.

The incidence of major allergy in patients with Hodgkin's disease was in the same range as that of the general population. The incidence of minor allergy and family history of allergy in these patients was less than

that of the general population. The small number of patients showing untoward reactions to alcohol or tobacco hardly makes this symptom valuable as a diagnostic tool.

No evidence appeared of increased susceptibility to coryza in patients with Hodgkin's disease. There was no change in the patient's allergic state after treatment with the agents used in Hodgkin's disease. Persistent eosinophilia was not typical of the patients with Hodgkin's disease observed in this series. (Dworin, M., Diamond, H. D., and Craver, L. F., *Hodgkin's Disease and Allergy: Cancer*, 8: 128-131, January-February 1955)

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#### Labile Diabetes

Among persons with severe diabetes, there exists a group referred to by Woodyatt as "brittle," a term which implies that the state of control breaks easily in either direction. Other designations which have been applied to this condition by various authors are "labile," "volatile," "unstable," and "total" diabetes. Labile diabetes, the term of reference employed in this article, exhibits a characteristic pattern wherein, for no apparent reason, the patient may suddenly develop periods of heavy glycosuria and/or acidosis shifting rapidly to violent, unexpected insulin reactions. The condition appears to defy almost all attempts at regulation with orthodox treatment which controls less severe forms without difficulty. Colwell compares the labile diabetic to a tight-rope artist in contrast to the mild diabetic who walks on a wide path.

Rapid fluctuations from glycosuria to insulin reactions are frequent occurrences in the first and second decades of life. This type of behavior is much less common among older patients with the exception of the non-obese diabetic in whom labile diabetes is quite common.

Such labile cases impose a challenge upon the physician to find the insulin type, timing, and dosage which will prevent ketosis, achieve as little glycosuria as possible and, most important, permit freedom from insulin shock which, in essence, is the prime objective of diabetic therapy in general. To circumvent severe insulin reactions, the clinician usually compromises between control and convenience. In other words, glycosuria is permitted as the lesser of two evils. Most authors concede that ideal control is seldom attained in this group.

The factors responsible for the instability of the labile diabetic are still unknown. Carelessness of the patient is frequently blamed for his poor diabetic control, but more often the clinician is faced with an apparently spontaneous onset of glycosuria and ketosis, or an equally unexplained episode of hypoglycemia. It is well established that infection, trauma,

surgery, variations in exercise, hyperthyroidism, myocardial infarction, et cetera, affect the normal carbohydrate balance. However, the large majority of the metabolic fluctuations of the labile diabetic occur in the absence of any of these factors. Moreover, this behavior appears to operate in the face of constant conditions of diet, insulin, and exercise. The fact that the labile cases are frequently persons with long-standing diabetes mellitus may be a clue. Some authors maintain that most children and many young adults develop lability only after long persistence (10 to 20 years) of the disease, especially if control has not been satisfactory.

Himsworth suggests that labile diabetes is a direct result of the imposition on clinical medicine of "chemical standards of normality" with disregard for the patient. In other words, many good physicians insist on complete "chemical" control, that is, absolutely physiologic blood sugar levels, at all costs. When absolute aglycosuria and restriction of the blood sugar level to physiologic limits are elevated to the status of objectives of treatment, treatment of diabetes must logically be directed to those ends, even at the expense of hypoglycemic attacks. One is forced to agree with Himsworth that a harmful hypoglycemia, resulting from attempting to satisfy chemical criteria, is the antithesis of rational therapy.

Thus, it would appear that, while severe diabetic patients cannot survive without insulin, neither do they always live normally with it. Although insulin is a potent weapon against the ravages of diabetes, one must keep in mind that it is a double-edged sword. Lest the treatment become worse than the disease, avoidance of hypoglycemia is the physician's chief responsibility.

An important factor, pertinent to the hypoglycemia of labile diabetes, lies in the inherent properties of slow-acting insulins. In a previous study, it was pointed out that disturbing insulin reactions are frequent occurrences with the protamine group of insulins. The high incidence of prolonged, violent, and demoralizing hypoglycemic reactions in patients receiving protamine, or mixtures of protamine and regular insulin, further attests to the validity of these conclusions.

In Colwell's opinion, a fairly quick-acting insulin modification used twice daily enables one to effect a good compromise between pin-point chemical control and convenience in the treatment of labile diabetes and can be accomplished with any of the following preparations: a mixture of three or four parts of regular insulin and one part of protamine zinc insulin; globin with regular insulin added; or NPH insulin with additional regular insulin. The method specifies that the total daily insulin dose be divided in such manner that the larger dose (from two-thirds to three-fourths of the total) is taken before breakfast, and the balance (from one-third to one-fourth of the total) before supper. Regular meals are somewhat smaller than average; interval feedings are given in the mid-morning, mid-afternoon, and at bedtime.

Undoubtedly, the most effective regulation of the labile diabetic case is attained by the injection of regular insulin three or four times daily. According to Colwell, four doses of regular insulin of equal size given at approximately six-hour intervals, along with meals of equal glucose value, provides the best possible control and the least danger of insulin reactions, even in the most difficult patients. An alternate, somewhat more convenient method, which has been proposed, involves the injection of about four-sevenths of the total daily regular insulin before breakfast, two-sevenths before the evening meal, and one-seventh at 3:00 a. m. The fact that it is possible to regulate severe diabetics with regular insulin should be ample proof that the lability, or brittleness, of these patients is due to the peculiarities of the actions of the depot (protamine) insulins rather than to uncommon endogenous factors or irregular food supplies.

In principle, insulin should be administered in as few doses daily as possible without permitting glycosuria or hypoglycemia. The goal of treatment in the author's cases is a twenty-four hour excretion of not more than 10 gm. of glucose. Of the utmost importance, in his opinion, is the use of quantitative estimations of glucose in fractional urine specimens, in preference to the more conventional blood sugar determinations, as a guide to the type and dosage of insulin.

A series of twenty-five young diabetic patients from private practice, ranging in age from 6 to 40 years, was reviewed for evidence of lability. During a total observation period of 68.7 years (approximately three years per patient) there was one mild episode of acidosis in this group; no severe insulin reactions occurred. Previously, eight of these patients had suffered one or more bouts of keto-acidosis and nine patients had had significant insulin reactions.

Ideal control (less than 10 gm. of glucose excreted in 24 hours) was ultimately obtained in nineteen of the twenty-five patients. The average length of time required to regulate the patients in this group was 92 weeks per patient. After the early stage of therapy, changes in the insulin dose and formula are made cautiously, a practice which partially explains the low incidence of hypoglycemia.

Fluctuations in the clinical status of these diabetics are not inevitable but are frequently induced by long-acting and intermediate insulins. As a general rule, diabetic patients of this severity are best regulated by means of two injections of regular insulin, uncombined, or in a mixture with protamine zinc, NPH, or globin insulin. (Goodman, J.I., Causes of Labile Diabetes: Its Treatment: Am. J. Med., 18: 448-452, March 1955)

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The printing of this publication has been approved by the Director of the Bureau of the Budget, June 23, 1952.

Hemoglobin C Disease

Hemoglobin C disease is an inherited chronic hemolytic syndrome thus far found exclusively in the Negro race. Hemoglobin C is transmitted as a semi-dominant or incompletely recessive nonsexlinked characteristic. Members of a family possessing a mixture of normal hemoglobin and C hemoglobin (C trait) do not, therefore, manifest a hemolytic syndrome.

In none of the cases in this study was there a history of antecedent anemia, jaundice, or episodes of bone or joint pains characteristic of crises. This was also true of the family history. With the exception of one case in which the spleen became huge, hospitalization was not required because of the underlying hemolytic syndrome. One may anticipate a higher incidence of gallstones in this group as an incidental consequence.

The absence of tower skull, high arched palate, stunted growth, and leg ulcers which are usually associated with long-standing congenital hemolytic syndromes, is characteristic of homozygous C disease. Apparently, the mildness of the hemolytic syndrome allows normal osseous and nutritional development.

Two of the four patients showed hepatomegaly. Moderate enlargement of the liver was noted in Case No. 1, whereas it was only slightly enlarged in Case No. 2. Whether hepatomegaly becomes an anatomic manifestation of homozygous C disease with advancing age, as has been observed regarding splenomegaly, cannot be stated with certainty, for in Case No. 1, cardiac failure and chronic alcoholism were present as additional contributing factors. The degree of splenomegaly distinctly overshadowed the lower degree of hepatomegaly in the cases in which they were associated.

The hemolytic process was reflected in the splenomegaly which was present in every patient. Splenomegaly probably represents reticuloendothelial hyperplasia secondary to increased demands for red cell disposal.

Judging from the age of the patient in Case No. 1, life expectancy is not significantly altered by the homozygous C state. The benign quality of the hemolytic syndrome does not appear to interfere with either reproductive or infant survival. With the exception of complications resulting from gallstone formation or direct trauma to the spleen, prognosis is excellent.

Splenomegaly and targeting of the red cells are constant manifestations of homozygous C disease. Contrary to the authors' experience, homozygous C disease without splenomegaly has been cited by Watson. Developmental abnormalities, constitutional symptoms, jaundice, crises, and sickling are absent. On the basis of these conditions, a large number of diseases which are capable of producing splenomegaly, can be excluded. Even though homozygous C disease has so far been found only in the Negro, other races probably are not exempt.

In the absence of other causes of splenomegaly, the presence of target cells becomes the major abnormality in differential diagnosis. Significant degrees of targeting are seen in patients with liver dysfunction, sickle cell disease, Mediterranean anemia syndromes, and following splenectomy. Of these, the mild Mediterranean anemia syndromes have, in the past, been most confusing in differentiation from homozygous C disease. In retrospect, however, notwithstanding the numerous similarities between these two conditions, the moderate to marked degree of targeting in the absence of significant poikilocytosis has been found to be characteristic of homozygous C disease; whereas moderate to marked poikilocytosis and only slight targeting have been typical of the Mediterranean anemia syndromes. Unawareness that C hemoglobin existed, and the consequent lack of appreciation of the subtle differences just mentioned, led to the erroneous description of Case No. 1 as Mediterranean anemia in a previous publication. An attempt is now being made to restudy the other patients reported on in order to rectify the error. There is no specific treatment. Intercurrent diseases are treated as they arise. Splenectomy may be necessary for massive symptom-producing splenomegaly. (Hartz, W. H. Jr., and Schwartz, S. O., Hemoglobin C Disease: Blood, 10: 235-245, March 1955)

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#### Mercumatinil in Congestive Heart Failure

The high incidence of toxicity and of intolerance to oral mercurial diuretics has been a great deterrent to wide usage. Instances of untoward effects have been reported in from 33% to 50% of patients taking oral mercurial diuretics. The efficacy of an oral preparation is a direct function of the amount of mercury absorbed. In clinical practice, however, the desired effect of increased efficiency with larger doses has been limited by the rising probability of intolerance.

In this report, a new oral diuretic mercumatinil, (Cumertilin) was evaluated both for its diuretic properties in outpatients with congestive heart failure and for the incidence and nature of toxic reactions.

Oral mercumatinil is a diuretic which would appear to have an established place in the therapy of congestive heart failure. It follows the pattern of many other mercurial diuretics insofar as they alone are not adequate in the management of severe, acute, or rapidly progressive cardiac decompensation. The parenteral diuretics still remain the drug of choice in these situations but the adjunctive use of mercumatinil tablets appears to offer a satisfactory therapeutic schedule.

The advantageous role played by mercumatinil tablets is in the management of the patient with congestive cardiac failure who has been brought to,

or near, basal weight with parenteral mercurials. The oral diuretic then assists in the maintenance of this optimal weight by promoting the continuance of diuresis, thus tending to keep the patient symptom-free. It may also permit a more palatable diet with liberalized salt intake.

Aside from gastrointestinal symptoms in one patient, to which mercumatilin questionably contributed, no evidence of toxicity or intolerance was encountered. This is a distinct advance in oral diuretics, all the more emphasized by the favorable response of twenty-two of the twenty-five patients observed. The high degree of tolerance to the drug by patients in the 50 to 70-year age groups, which comprised the greatest number of patients observed, indicates its safety.

An interesting observation was that most patients had hypertension or arteriosclerosis as the etiology of their cardiac failure. These are the causative categories which as a rule may be considered as progressively deteriorating, and it is in this particular group that oral mercumatilin was able to obviate the need of mercurial diuretic injections.

The use of oral mercurial diuretics, to prolong the time interval when such injections would be necessary, is a desirable and practical procedure which has both primary and secondary advantages. The first is maintaining the patient symptom-free for longer periods with none or fewer injections; the second is reducing the patient load in a cardiac clinic and the frequency of visits by home care physicians and nurses. It was found that, as the "chronic clinic patients" could be satisfactorily maintained, the clinic physicians were enabled to spend more time with individual patients.

Oral mercumatilin (Cumertilin) satisfactorily controlled congestive heart failure in twenty-two of twenty-five patients without evidence of intolerance or toxicity. Three patients, exhibiting unstable or rapidly progressive congestive failure, were not benefited. (Dimitroff, S. P., Lewis, R. C., Thorner, M. C. and Field, J. B., Oral Mercurial Diuretics: Mercumatilin in the Treatment of Congestive Heart Failure: Am. Heart J., 49: 407-412, March 1955)

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#### Psittacosis in Colorado

The purpose of this report, which is based on the experience of 18 patients who acquired psittacosis in Colorado during the first half of 1954, is to illustrate the prevalence of psittacosis and to emphasize the fact that, when psittacosis is diagnosed early and treated correctly, it is now a disease of relatively slight severity.

Fifteen of the 18 patients had been exposed to parakeets. Five worked in pet shops and had handled large numbers of birds; most of the birds

appeared healthy, but all 5 patients admitted contact with some birds which had appeared ill or died. Ten patients had in their homes parakeets which they had either purchased or received as gifts. In most instances, the birds were recent acquisitions. Six of the 10 patients stated that the birds at no time appeared ill. Four of the 10 stated that their birds either became ill and were sacrificed, or had died. One patient, in addition to a parakeet contact, had pigeons, turkeys, and chickens on his ranch, and had recently cleaned his chicken house. The 16th patient had no known contact with psittacine birds but worked as a laboratory helper caring for pigeons which were subsequently shown to be infected. The 17th patient admitted to contact with wild pheasants. The 18th patient was not aware of any avian exposure.

The onset of the symptoms was gradual in some instances, abrupt in others. Constitutional symptoms, notably severe malaise, headache, fatigability, muscle aching, anorexia, nausea, and feverishness or chilliness were common presenting complaints. Shaking chills occurred in 14 of the 18 patients. Most patients noted cough which usually produced little sputum. None complained of pain of pleuritic character. At least 3 became disoriented, and in one of these the degree of disorientation was such that, at the time of admission to the hospital, a diagnosis of encephalitis was considered.

Physical findings were, in general, not remarkable, and in many instances the only findings noted were the fever and prostration. Maximum temperatures ranged from 101.0° F. to 105.5° F. in the 13 patients whose febrile course was adequately recorded. In several cases, careful auscultation revealed fine rales, most often posteriorly over one or both lower lobes. In 4 of the 9 patients seen by the authors, a soft spleen was felt from 2 to 4 cm. below the costal margin. In one patient, during the second week of illness, scattered macular erythematous lesions appeared in small numbers on the abdomen and back.

With the prospect of eradicating the disease so remote, the immediate problem would seem to be that of finding a way of living with it, and this can be done. Serious trouble can be avoided if the following criteria are met: (1) All persons, acquiring birds as pets or working with them in their occupation, are made aware of the fact that there is a risk that they may acquire psittacosis. While the risk may be greater with an obviously ailing bird, it is real, even with a bird which appears to be in perfect health. Adding chlortetracycline to the birds' drinking water for short periods--a common practice among commercial bird handlers--will not eliminate the danger. (2) Physicians, knowing the current increase in the incidence of psittacosis, view patients with unexplained fevers or "virus pneumonias" as possible cases of psittacosis and make inquiries regarding avian contact. The clinical features which are most helpful are the duration and height

of fever, which exceed those of common respiratory infections, the greater toxicity of the patient, the occurrence of one or more shaking chills, splenomegaly when present, and the demonstration that the patient has one or more pneumonic lesions. The latter may be small, even though the patient is desperately ill, and it is wiser to consider psittacosis as a systemic infection rather than as a localized viral pneumonia. (3) Appropriate therapy is employed. While penicillin in massive doses has certainly been effective, the data presented in previous reports and in this report, leaves little doubt that the customary doses of procaine penicillin of from 300,000 to 600,000 u/d may be ineffective. Effects with chlortetracycline, oxytetracycline, and tetracycline appear to be far more predictable. This has previously been shown for chlortetracycline and oxytetracycline. The results presented in this series, in which it was shown that each of 7 patients treated with tetracycline became afebrile in from one to three days after therapy was commenced, suggest that the latest addition to this series of drugs is as effective as the others. Intravenous therapy, in doses of 500 mg. every 12 hours, may be advisable in desperately ill patients. Otherwise, 2.0 gm. per day by mouth, in divided doses, appears to be an adequate dose. An initial priming dose of 2 gm. may be advisable. It is possible that smaller doses will suffice. (Fitz, R. H., Meiklejohn, G., and Baum, M. D., Psittacosis in Colorado: Am. J. M. Sc., 229: 252-260, March 1955)

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#### Conservative Treatment of Cervix Carcinoma in Situ

An analysis of the questionnaires, sent out in 1952 by both Carter and Davis, indicates that carcinoma in situ of the cervix is treated in most clinics by hysterectomy of varying extent, some using a more radical type of extirpation than others. Some preserve the adnexa in the younger age group, while others remove the ovaries in all cases. A few use x-ray and radium therapy.

During the past 6 years, on the Gynecological Service of The Roosevelt Hospital, the authors have experimented with various types of biopsies in evaluating the pathology found in all cases with positive cytology smears. Gradually, these biopsies have become more and more extensive. The multiple punch method was replaced by the ring procedure, with which the authors endeavored to excise the whole squamocolumnar junction. This has been replaced more recently by the cone biopsy which not only widely excises the squamocolumnar junction, but also removes a cone of tissue, including most of the gland-bearing area of the cervical canal, approximately to the internal os.

This procedure was found to have certain advantages. It serves, not only to prove the presence of carcinoma in situ, but also shows whether

or not, and to what extent, the cervical glands are involved. Any areas of near or frank invasion can be seen as well. In addition, after such a diagnostic study, the plan for treatment would seem more logical and less likely to be erroneous. If the lesion is intraepithelial or with minimal gland involvement, a simple hysterectomy will suffice; while if the gland involvement is extensive, or if there is any question of early invasion, a wider hysterectomy or even a radical node dissection can be carried out. In the latter instance, if preferred, the patient can be treated with x-ray and radium. At least one will avoid the embarrassment of doing a simple hysterectomy for carcinoma in situ diagnosed by punch or shallow ring biopsy, and then discovering invasive carcinoma in the cervix of the hysterectomy specimen.

The study of these cervical ring and cone specimens, together with multiple section observation of the hysterectomy specimens, subsequent to such biopsies, forms the background of this article. It supports the authors' observations that certain cases of carcinoma in situ may be treated conservatively, when desired, by doing nothing more than an extensive cone type of excision or cervical amputation, provided a careful cytological follow-up ensues. Additional evidence for this statement is to be found in the cases so treated and followed.

In the authors' experience with the treatment of 50 cases of carcinoma in situ of the cervix, 15 patients have remained cytologically negative for from 6 months to over 2-1/2 years after having had no other procedure than an extensive cervical biopsy excision; 34 have had hysterectomies (4 with pelvic lymphadenectomies); and one was treated with x-ray and radium. In 25 cases, extensive biopsy excision of the cervix had preceded the hysterectomy, and in 21 of these, no residual disease could be found in the hysterectomy specimen. The 4 cases with residual disease continued to have positive cytology smears after the biopsy procedure and preceding the hysterectomy.

Experience gained from this study indicates that, when desirable, conservative treatment of carcinoma in situ may be carried out, provided that a sufficiently large area of cervical tissue is removed by cone excision or partial amputation, and provided that the case is closely followed by cytological smear examinations. (Peightal, T.C., Brandes, W.W., Crawford, D.B. Jr., Dakin, E.S., Conservative Treatment of Carcinoma in Situ of the Cervix: Am. J. Obst. & Gynec., 69: 547-552, March 1955)

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Experimental Caries in Germfree Rats  
Inoculated with Enterococci

This report is based on the study of experimental dental caries in which the new biological technic of inoculating otherwise germfree animals with known bacteria was used.

It is apparent from the review of earlier observations which have had either a direct or indirect bearing on the findings in this report, that caries of the teeth must be primarily a bacterial disease. With procedures which quantitatively, or qualitatively, limit or alter the oral microbial flora to a greater or lesser extent, that is, in an environment such as occurs when penicillin or the other antibacterial agents are applied directly to the mouth or tooth surfaces, a reduction, though not a complete cessation of caries, has resulted. Furthermore, with the complete absence of micro-organisms as in germfree rats, no caries has resulted despite the ingestion of a highly cariogenic diet for a long period of time. By inductive reasoning, though complete direct experimental evidence was lacking, it has been possible to state that caries is a disease requiring the presence of living micro-organisms (or, to be precise, at least the requisite bacterial enzymes on a submicroscopic level).

In the present study with gnotobiotic rats, direct evidence has been presented that one bacterial strain (or possibly one in remote association with another) has produced caries in otherwise germfree rats. In these animals, inoculated with an enterococcus, it must be noted that no lactobacilli were present in the system. The only other bacterial cells, besides the enterococcus in this host-microbe system, were a proteolytic rod in one group of rats and a pleomorphic bacterium in the other later group of animals. In neither case were these latter micro-organisms ever found consistently in the oral cavity, nor could they be seen in the microtome-cut sections stained for bacteria which is in direct contrast to the ubiquitous enterococci.

Nevertheless, despite the rather strong experimental evidence in these animal studies that typical carious lesions can be produced in the absence of lactobacilli, it should be pointed out that enterococci are lactic acid bacteria. Cells belonging to the enterococcus group are generically streptococci, usually of the (gamma) nonhemolytic type. They can produce lactic acid from glucose much as certain of the lactobacilli can. Specifically, the enterococcus, which predominated and always could be isolated consistently from the rats' oral cavity and teeth, was a strain closely resembling the species Streptococcus fecalis.

It was observed that this particular strain of enterococcus, inoculated into the germfree environment, had the capabilities of producing extensive carious lesions in every one of 13 animals which had ingested a highly cariogenic diet. The observation does not preclude the possibility that certain lactobacilli or other bacteria could likewise produce dental caries under similar experimental conditions. This report, nevertheless, establishes the fact that bacteria other than lactobacilli can cause caries under certain experimental situations. This is especially significant, it is believed, from the historical view, inasmuch as lactobacilli have been isolated

by so many different research workers under conditions implicating them as the specific, sole, probable, or possible cause of caries in teeth. It should be reemphasized that the particular culture used in these studies, as well as all enterococci as a group, belong to the same bacterial family as the lactobacilli, namely the Lactobacteriaceae, because they all have in common the ability to elaborate lactic acid to a greater or lesser extent.

In this report, two groups, totaling 13 rats inoculated with known bacterial cells in which an enterococcus was the predominating microbial form of life, all developed carious lesions in their molar teeth. These animals were fed the same standard diet that was fed to all conventional control rats having an unknown, complex, bacterial flora. These latter rats regularly developed carious cavities during the 150-day test period. (Orland, F. J., et al., Experimental Caries in Germfree Rats Inoculated with Enterococci: *J. Am. Dent. A.*, 50: 259-272, March 1955)

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#### Milk-Alkali Syndrome

Burnett and associates, in 1949, reported six cases presenting: (1) hypercalcemia without hypercalciuria or hypophosphatemia; (2) calcinosis manifested especially by ocular lesions resembling band keratitis; and (3) renal insufficiency with azotemia, following the prolonged intake of milk and absorbable alkalis, usually for treatment of active peptic ulcer. This clinical entity has become known as the "milk-alkali syndrome." Since Burnett's initial description, there have been sporadic reports of cases, some of which have stressed complications such as metastatic calcification, nephrocalcinosis, and renal calculi. The early signs and symptoms produced by this syndrome are such as to be easily overlooked. It is the purpose of this report to present the clinical and laboratory findings in eight cases of milk-alkali syndrome seen at the Mayo Clinic since 1949, in order to emphasize the hazards and relative clinical importance of this condition.

The cases, described in the report, correspond in every important respect to those previously outlined by Burnett and co-workers. The clinical symptoms, with pertinent laboratory findings seen in these patients, are summarized. Also summarized are the estimated quantities of milk and absorbable alkalis which were ingested in each case. The number of days required for the blood calcium to return to normal levels, following the use of an ulcer diet low in calcium content, is illustrated.

The syndrome, characterized by the cases, must be differentiated from other conditions accompanied by hypercalcemia and azotemia, such as hypervitaminosis D, primary hyperparathyroidism, multiple myeloma,

sarcoidosis, and carcinomatosis of bone. A history of ingesting vitamin D will most readily identify cases in the first category; the character and extent of the osseous involvement, together with other specific features, will, in the majority of instances at least, easily differentiate the others. Primary hyperparathyroidism without bone disease, however, may provide a difficult problem in differential diagnosis. This is especially the case when, as not infrequently happens, primary hyperparathyroidism occurs in a patient who has active peptic ulcer.

The distinction between primary hyperparathyroidism without bone disease occurring in a patient with active peptic ulcer, on the one hand, and milk-alkali syndrome, on the other hand, becomes even more difficult in those instances in which, because of secondary nephrocalcinosis or pyelonephritis resulting from nephrolithiasis, primary hyperparathyroidism is also accompanied by significant azotemia. In these circumstances, there may result a fall in serum calcium from the previously high levels to levels more nearly normal. The serum phosphorus usually rises from the pathologically low levels to normal or even elevated levels. There is, furthermore, a disappearance of the hypercalciuria which ordinarily characterizes primary hyperparathyroidism. Thus, the occurrence of renal insufficiency tends to mask each of the primary chemical features of this disease. In most circumstances, however, even though some degree of renal impairment with nitrogen retention is present in primary hyperparathyroidism, both hypercalciuria and hypercalcemia persist.

Burnett and associates stressed the lack of hypercalciuria as a critical diagnostic feature of the milk-alkali syndrome and as a characteristic of most importance in differentiating it from primary hyperparathyroidism. This was true of the cases which the authors have described. However, the relative degree to which these diagnostic features may vary, in these two conditions, remains to be precisely defined. (Scholz, D. A., and Keating, F. R., Jr., Milk-Alkali Syndrome: Arch. Int. Med., 95: 460-468, March 1955)

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#### Pulmonary Function in Diseases of the Chest

Pulmonary function tests are designed to provide accurate information of the extent and location of disturbed function, thereby making available additional information for use with the history, physical and roentgenological examination in the clinical management of the individual case. A battery of physiological test measurements is used. Each measurement possesses a wide range between the normal and the abnormal, and each covers an essential aspect in the evaluation of the adequacy of the gas

exchange. One group of tests concerns the bellows action of the chest and lungs and evaluates the ability to move air in and out of the alveoli during the process of breathing. The other group of tests relates to the blood gas exchange across the alveolar-capillary or pulmonary membrane (oxygen and carbondioxide transport). Pulmonary function measurements assist in the interpretation of the meaning of pulmonary disease from the stand-point of disability, operative risk, and treatment.

Great advances have been made in research investigations relating to pulmonary function in recent years, and many of these new tests are interesting and give promise of clinical value in the future. However, as yet they are not sufficiently well established, or the necessity proved, to be routinely included in a pulmonary function evaluation. The direct tension measurements of arterial pO and pCO is a valuable research procedure, but it is difficult to acquire a satisfactory proficiency in performance, hence subject to many errors by inadequately trained personnel. The use of the nitrogen meter appears promising, but as yet the practicability and reliability of both test and apparatus have not been adequately demonstrated. Pulmonary compliance, relating to the pressure volume relationship of the lung, is a popular study at the present time, but whether this will provide any more practical clinical information beyond that which can be obtained with simple spirogram tracings, remains to be demonstrated. Similarly, the pneumotachograph is an interesting research instrument, but whether it provides any more information than can be obtained from the spirogram tracings on the respirometer, remains to be demonstrated.

An accurate evaluation of the degree of pulmonary function impairment may be made from the following physiological tests: (1) ventilation measurements from spirogram tracings (total vital capacity, three-second timed vital capacity, maximal breathing capacity, and the shape of the exhalation curve following a deep breath); (2) degree of bronchospasm present; (3) residual air capacity and alveolar nitrogen percent after seven minutes oxygen breathing; (4) arterial blood oxygen saturation at rest and immediately after step-up exercise; (5) oxygen uptake during step-up exercise; (6) percent of oxygen extracted from the inspired air breathed; and (7) character and duration of dyspnea after step-up exercise. (Motley, H. L., Pulmonary Function in Diseases of the Chest: Dis. Chest, 27: 303-309, March 1955)

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#### M. I. F. C. Technique

The WHO Senior Advisor of the Regional Office for the Western Pacific, Manila, P. I., has reported that "the efficacy of M. I. F. C. (Merthiolate-iodine-formaldehyde concentration) technique as a preservative, rapid

staining and diagnostic aid for helminthic eggs and protozoa in feces was tested against the standard method followed in all our previous surveys. During the quarter, 292 stools from Palo and 110 from Carigara were compared and the results of the two studies tabulated.

'These results indicate that M. I. F. C. technique is more efficient in detecting S. japonicum eggs in stools than the standard method and has the additional advantage of the stool being preserved and transported to the laboratory without the hatching of ova. For this same reason, this technique cannot be used for determining the viability of ova for which purpose the standard method is the most suitable. M. I. F. C. involves the use of a centrifuge and a multiplicity of reagents, whereas the standard technique requires only glycerine and water plus the initial cost of sedimentation glass.

"M. I. F. C. Technique was developed at the Laboratories of the U. S. Naval Medical Research Unit No. 3, Cairo, Egypt, by W. Blagg and co-workers. The technique is being further developed to enhance its usefulness for large scale work. In spite of its present disadvantages, there is no doubt that it is a more efficient and more rapid method of detecting S. japonicum ova in stools as compared to the cumbersome and time-consuming standard technique. The latter, however, cannot be replaced completely by the former due to its inherent disadvantages in killing the ova. However, it is felt that the adoption of these two techniques to be used as required will be valuable in this work."

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#### Rotation Sequence and Tours of Duty

The normal rotation sequence for Medical Department officers is sea-shore-foreign shore-shore. Duty tour lengths are influenced by several factors. These include, but are not limited to, the ratio of afloat and foreign shore billets to those ashore, number of officers on active duty for limited specified periods, requirements for specialist qualifications, billets of an unusually arduous nature or in isolated locations, and training requirements. The tour lengths indicated below are considered to be normal, for Reserve and Regular Medical Department officers, but in individual cases the influences mentioned above may require deviations from them.

- a. Normal tour lengths afloat are two years.
- b. Normal tour lengths on foreign shore are promulgated by Naval Personnel Instruction 1300.15A.
- c. Normal tour lengths with Fleet Marine Force are:
  - (1) 1st MarDiv              24 months
  - (2) 2nd MarDiv              24 months
  - (3) 3rd MarDiv              12-15 months in Japan

d. Normal tour lengths of duty ashore in the continental United States are three years for officers in the rank of lieutenant commander through captain; all others two years.  
(PersDiv, BuMed)

(Note: The notice relative to normal rotation sequence and normal tours of duty which appeared on page 26 of the Navy Medical News Letter, Vol. 25, No. 7, 1 April 1955, is applicable to all Medical Department officers.)

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#### New Radio Reports Patient's Heart Condition

A new attack on heart disease is being made through newly developed pocket-size radio equipment that broadcasts continuous measures of heart and lung activity. This equipment, conceived by Captain N. L. Barr, MC USN, and developed under his direction in the Aviation Medicine Division of the Naval Medical Research Institute, National Naval Medical Center, Bethesda, Md., was displayed and operated at the 26th Annual Meeting of the Aero Medical Association held in Washington, D. C., March 21-23, 1955.

The development is expected to make a significant contribution to present knowledge of the heart and its function both in health and disease.

It will now be possible to follow the changes in heart and lung activity through a normal working day and then through an evening of play and a night of sleep; and to find out what the normals are for normal working people as well as the influence of work and exercise on the diseased heart. If the physician cannot remain at his radio constantly, permanent records can be made on ink-writers and tapes for future study.

The patient is supplied with a miniature radio the size of a package of King-size cigarettes, and a battery power supply of similar size. A miniature electronic device and another power supply of similar size picks up the heart waves, heart sounds, and breath sounds and changes them to electrical impulses that can be handled by the transmitter. The total weight of the equipment worn by the patient is less than one pound. The equipment range is limited to the hospital grounds.

The patient can go about his routine activities or take prescribed exercise while the very small radio carried in his coat pocket sends continuous information to the physician. The doctor, with a radio receiver in his laboratory, can hear the patient's heart beat, hear him breathe, and watch an automatic pen on the desk write the electrocardiograph record. At the same time, a dial on the doctor's radio indicates the patient's heart rate. (TIO, BuMed)

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From the Note Book

1. The following communication was received by the Editor of the Naval Ammunition Depot's Hingham, Mass., bi-weekly publication, Shot and Shell, and was published in that paper's January 24, 1955, issue. Mr. James J. O'Kelly, Chief Quarterman Ordnanceman, wrote: "Many times, in the course of my duties in the Ordnance Department, it has been my good fortune to witness the competent and efficient manner with which the personnel who staff our Depot Dispensary carry out their assigned duties . . . each case is handled expertly and with dispatch . . . .

". . . . it behooves me to say, for the information of all concerned, that from the Navy Doctor and the Navy Nurse down to the last corpsman, their attention to duty, skill, compassion, and teamwork is beyond any normal standard that could be set." (TIO, BuMed)

2. Captain M. M. Maxwell, DC USN, was recently named dean of the newly founded College of Dentistry at Seton Hall University, Jersey City, N. J. He is presently undergoing final physical evaluation at the Naval Hospital, National Naval Medical Center, Bethesda, Md., before being retired after more than 34 years of active duty. (TIO, BuMed)

3. The Metropolitan Conference of Hospital Dental Chiefs, which has as members the chiefs of the dental services of 150 hospitals in the New York City area, held its annual meeting for installation of officers at the Naval Hospital, St. Albans, N. Y., March 22, 1955. Dr. E. Blumenthal, the outgoing president, introduced Rear Admiral R. W. Taylor, DC USN, the Third Naval District Dental Officer, as guest of honor. Captain C. F. Hoyt, DC USN, Chief of Dental Service, Naval Hospital, St. Albans, was elected president and installed at this meeting. (TIO, BuMed)

4. Captain A. S. Chrisman, MC USN, Director, Personnel Division, Bureau of Medicine and Surgery, will attend the Tenth Interagency Institute for Federal Hospital Administrators to be conducted under the auspices of the Air Force at the Sternberg Auditorium, Walter Reed Army Medical Center, Washington, D.C., April 25-May 13, 1955. Also scheduled to attend this course are: Capt. H. J. Cokely, MC USN, Capt. G. B. Creagh, MC USN, Capt. F. P. Kreuz, MC USN, Capt. J. R. Reid, Jr., MC USN, and Capt. J. R. Weisser, MC USN. (TIO, BuMed)

5. Four Bureau of Medicine and Surgery scientific exhibits will be shown at professional meetings during the month of April 1955. April 17-21, 1955, the "U. S. Navy Dental Corps Casualty Treatment Training Program" will be shown at a meeting of the New Jersey State Dental Society. "Late Effects of Internally Deposited Radioactive Materials" and "Fibrous Dysplasia of

"Skull and Facial Bones" will be displayed at the Fifth Inter-American Congress of Radiology, April 24-30, 1955; and "Experimental Therapy of Bone Marrow Aplasia Induced by Ionizing Radiation" will be shown at a meeting of the American College of Physicians, April 25-29, 1955. (TIO, BuMed)

6. Nearly 200 wives, children, and relatives of students and staff members at the Naval School of Aviation Medicine, Pensacola, Fla., were welcomed aboard for an "Orientation Cruise" on 18 March.

Frequently host to high ranking military men and distinguished scientists from all over the world, School authorities decided such courtesies should include the "Home Folks." However, during the first 15 years, no one has thought to invite the families to see at first hand what goes on. Through the efforts of Capt. J.C. Early, MC USN, Commanding Officer, all wives and children of school personnel were invited to visit the School. Clinics were in progress, research scientists were at work in their laboratories and the many other activities of the institution were going full blast when the wives made their "working inspection" throughout the buildings of the command. A brief social hour was held in the school library following the tour. Visiting wives reported high interest in varied projects underway at the school and great appreciation of the courtesies extended them.

7. Among both men and women at every age, the married have lower death rates than the single, widowed, or divorced. When allowance is made for the variation in age distribution, the mortality of bachelors is nearly two-thirds greater than that of husbands, and the mortality of widowed and divorced men is about double that of husbands. The mortality of spinsters is a fourth again as high as that of wives while the mortality of widows and divorcees is half again as high. (Public Health Reports, March 1955; D. Shurtleff, M. P. H.)

8. The clinical status and routine examination of the patient should be correlated with the results of a battery of tests, the electrocardiogram, the master "2-step" exercise test, and the ballistocardiogram, for the final, early, and accurate diagnosis of coronary disease. (Dis. Chest, March 1955; L. Pordy, M. D.)

9. A report on recent studies on the diagnosis of Cat Scratch Fever appears in Ann. Int. Med., March 1955; S. S. Kalter, J. E. Prier, and J. T. Prior.

10. A method for x-ray visualization of the pancreas is described. The procedure may be performed at operation or in the postoperative period. (Radiology, March 1955; H. Doubilet, M. D., M. H. Poppel, M. D., and J. E. Mulholland, M. D.)

Training Course in Field Medicine

The course in Field Medicine is scheduled to be conducted at the U.S. Marine Corps Barracks, Camp Pendleton, California, on May 17, 1955, for the benefit of Naval Reserve male medical personnel residing in the 11th, 12th, and 13th Naval Districts.

The course is of two weeks' duration and is designed to provide specialized training in field medicine including practical instruction in Medical material logistics, preventive medicine in the field, professional treatment of emergencies, and medical organization with Fleet Marine Units. In addition, the trainee will receive practical instruction of a military nature including items of individual equipment, practical march, and bivouac.

Eligible personnel who desire to attend this course in a pay status should submit their request to the Commandant of their home naval district at the earliest practicable date. Bachelor Officers' Quarters will be available. Working uniform is required. (ResDiv, BuMed)

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BUMED INSTRUCTION 6222.5A

15 March 1955

From: Chief, Bureau of Medicine and Surgery  
To: Ships and Stations Having Medical Personnel Regularly Assigned  
  
Subj: Treponemal Immobilization Test for Syphilis

This Instruction describes the Treponemal Immobilization Test (TPI test) and sets forth the criteria and procedures for its use.

BuMed Instruction 6222.5 is canceled.

\* \* \* \* \*

BUMED NOTICE 7100

17 March 1955

From: Chief, Bureau of Medicine and Surgery  
To: Activities under the management control and financial responsibility of BuMed  
  
Subj: Fiscal Year 1957 requirements for ambulances, special medical and non-passenger carrying vehicles; materials handling equipment; and construction, fire fighting, utility and weight handling equipment

Ref: (a) Appendix A and B, Technical Publication NavDocks TP-TR-1  
of 15 June 1953  
(b) BuMedInst 10490.1

Encl: (1) Sample Format

This Notice desires information concerning field activity replacement and augmentation requirements for subject vehicles and equipment for use in planning and preparation of the Bureau of Medicine and Surgery FY 1957 budget estimates; and to request detailed justification in support of present allowances. This data is necessary to assist this Bureau in support of its position during budgetary hearings.

\* \* \* \* \*

BUMED NOTICE 6750

22 March 1955

From: Chief, Bureau of Medicine and Surgery  
To: Commandants, All Naval Districts (less 10, 15, and 17)  
and Commandant, Potomac River Naval Command  
  
Subj: BuMedInst 6750.1A Ch 1 (Dental Commissioning Allowance List  
for Naval Reserve Training Centers)

Encl: (1) Subject Change

This Notice promulgates Change 1 to subject instruction. This change provides for a Dental Commissioning Allowance List for Naval Reserve Training Centers wherein the item stock numbers and identifications are in conformity with the Armed Services Medical Stock List and the current authorized allowance.

\* \* \* \* \*

BUMED INSTRUCTION 6510.4A

29 March 1955

From: Chief, Bureau of Medicine and Surgery  
To: Stations Having Medical Corps Personnel Regularly Assigned  
  
Subj: Carbon monoxide blood concentration in aviation personnel;  
determination of

This Instruction instructs medical officers aboard naval activities within the continental limits of the United States in the preparation and shipping of blood specimens obtained from aviators and aircrewmen for carbon monoxide determination. BuMed Instruction 6510.4 is canceled.

\* \* \* \* \*

BUMED INSTRUCTION 6710.13

29 March 1955

From: Chief, Bureau of Medicine and Surgery  
To: All Ships and Stations  
Subj: Defective medical and dental material; authority for disposition of  
Ref: (a) Medical and Dental Materiel Bulletin, Edition No. 52  
dtd 1 March 1955  
(b) Art. 25-21, ManMedDept.

This Instruction provides authority for the disposal of defective material listed in paragraph IV of reference (a).

\* \* \* \* \*

AVIATION MEDICINE DIVISION



Refractive Errors and Depth Perception

Depth perception is a function of binocular vision. It is the perception of the third dimension and is more commonly known as third degree fusion. There may be a determination of the third dimension in monocular vision which is derived from memory association and reasoning. Binocular depth perception has the element of spontaneity which is not present in monocular vision. The spontaneous perception of depth is necessary for the pilot of present-day military aircraft and is a necessary element for the navy pilot in carrier landings.

Depth perception develops spontaneously as the other visual functions develop. Once established, it remains as a spontaneous and simultaneous function unless interrupted by disassociation of the two retinal images in the cortical area.

Interruption of association of the retinal images may be due to a disturbance of the eye muscle balance and failure of the eyes to maintain binocular associated parallel movements. Disease or injury at any level of the optical system of the eye may interrupt the association of binocular images.

Another cause for poor depth perception is refractive error. With refractive errors in both eyes, there are blurred images which are not readily associated. Correction of the refractive error restores good binocular depth perception.

Unequal refraction in the eyes, when of high degree, may result in eye muscle imbalance with squint and loss of binocular fusion. In moderate differences of refraction (hyperopia) there may be no interference with the visual functions during the first three decades of life. It is interesting to note the effect of the natural changes in accommodation upon the association of binocular images and depth perception.

In one case, a naval aviator on his annual physical examination, was able to read neither the Verhoff nor the Howard-Dolman apparatus correctly. His accommodation was OD = 13.8 D and OS = 8.3 D. He was 28 years of age. Under cycloplegic his refraction was OS = Plano and OD = + 2.50 S and + 0.50 sp cyl ax 15. With the correction in place, he was able to pass both the Verhoff and Howard-Dolman tests. After recovery from the cycloplegic, he accepted the following refraction: OS = Plano and OD = + 1.75 S and + 0.50 cyl ax 15. Without the correction, he was able to pass neither the Verhoff nor the Howard-Dolman tests. With the correction in place, he was able to pass both without difficulty.

In another case, an aviator on his annual physical examination was able to pass neither the Verhoff nor the Howard-Dolman test for depth perception. A refraction showed an error of OD = + 0.50 S and OS = + 1.50 S. His age was 34 years. With the correction in place, he was able to pass both the Howard-Dolman and Verhoff tests without difficulty.

It is a common finding that defective depth perception occurs in naval aviators above 35 years of age. It is most commonly found after 40 years of age.

#### Conclusion:

Differences of refraction in the eyes may be adjusted by accommodation in the vigorous and young individual so that there results no interference with depth perception. As the lens changes occur with age, accommodation no longer adjusts for difference of refraction in the eyes, and there is poor association of binocular images with a resultant loss of fine depth perception.

The higher differences in refraction of the eyes result in earlier manifestations of loss of depth perception. The manifest loss of depth perception in cases of lower refractive differences is delayed until the later stages of presbyopia.

The cases described in this article are confined to hyperopic refractive errors. Myopia requires refractive correction at all ages for good depth perception. A refraction, in the case of aviators who fail to pass the depth perception, may explain the difficulties readily.

\* \* \* \* \*

#### "Where Was the Flight Surgeon?"

An F2H pilot (with 18.5 hours of flight in type and 4.7 night hours of flight in the previous 3 months) was grounded because of anxiety arising from his witnessing the fatal crash of one of his friends. He was told to take a few days off and return for consultation. Five days later, "still feeling uneasy," he returned and asked to see the flight surgeon who had grounded him. He relates as follows:

"The enlisted man in the outer office told me to take a seat and he would be with me in a minute. After a short wait, he called me in and gave me an up-chit signed by a different flight surgeon (the doctor who had grounded him was not available). I was a little confused but thought because I was not grounded for physical reasons that this was normal. I returned to my squadron and presented the Schedules Officer with my up-chit."

The following night, he was scheduled for a night hop. In his report he states, "I would have been very relieved had there been no aircraft available."

To make a long story short, he took the hop, landed fast, and ran into an FJ-2 which was completing its roll-out ahead of him. The accident was classified as pilot error of both technique and judgment. The report reveals an "error in technique occurred when the pilot landed too fast and then failed to employ any method of reducing speed during the roll-out. Errors of judgment occurred when the pilot failed to request removal from the flight schedule because of his mental uneasiness and failed to take a wave-off upon losing sight of the aircraft ahead during the landing approach."

All pilots involved in this accident were uninjured. However, there is a matter of \$31,999 damage to aircraft with the subsequent accident reports to be made out, disposition boards, and many other administrative headaches to be reckoned with. One of the endorsements to the AAR of this

accident is -- "with full knowledge of the shortage of medical officers assigned to the Medical Department, it is recommended that flight surgeons assigned to aircraft groups make a weekly visit, even if for a short duration, to each squadron in the group. During these visits, flight surgeons could lecture pilots on the mental and physical aspects of flying as well as observe the pilots in an informal atmosphere."

(See Grampaw Pettibone's account of this accident in the March 1955 issue of Naval Aviation News, First Story, page 8.)

As is often the case in retrospect, it is difficult to review such a comedy of errors and point out a principal culprit. However, it is equally difficult to resist the view of an apprehensive pilot, returning from a night hop which he was not prepared to take, who was oblivious to everything except the burden of anxiety he was bringing into the groove, and landed with a sigh of relief which lasted for 5000 feet of runway.

All of these contributed somehow to this accident: the flight surgeon who grounded the pilot and wasn't available when he returned, the corpsman who got him an up-chit, the flight surgeon who signed the chit without seeing the pilot, the schedules officer, the tower operator, and of course, the pilot himself.

This we know -- human factors in accident causation are vitally important in flying high performance aircraft. Flight surgeons should be intimate, rather than casual, members of their squadrons. To an increasing degree, flight surgeons are responsible for the safety of their pilots.

#### GOOD RULES OF PRACTICE FOR EVERY FLIGHT SURGEON SHOULD BE:

- (1) Would HE fly a hop with this pilot?
- (2) Would HE take this oxygen gear to 35,000 feet?
- (3) Would HE rely on this ejection seat?
- (4) Would HE rely on this exposure suit, this inertia reel, this Mae West, or other piece of safety gear?
- (5) What could HE have done to prevent this accident?

The outcome of the disposition board in this instance is not known at present. It is possible, however, that a potentially good pilot, whose training costs in the neighborhood of \$75,000, could be lost to the fleet because insult had been added to injury at a time when that naval aviator needed the help his flight surgeon is best qualified to give. Things might have been very different had the flight surgeon given this pilot an opportunity to ventilate his anxiety and then picked up the phone to call, or paid a visit to, the squadron commanding officer with whom a day hop or two could have been arranged for the pilot before his return to full flying status.

\* \* \* \* \*

Aero Medical Association Annual Meeting

The 26th annual meeting of the Aero Medical Association held 21-23 March 1955, in the Hotel Statler, Washington, D. C., is now history and, in passing, established an all-time high for attendance, interest, and professional excellence. The record number of 1279 members and guests registered for the three days of activities and many other invitees participated in the several "special events" programmed by the Association.

In attendance by invitation, were 47 foreign delegates representing 32 friendly nations. These delegates are the leading aviation medicine authorities of their countries, many being surgeons general and medical directors of their respective military and civilian aviation governmental departments.

The Association's President, Brigadier General Otis O. Benson, USAF (MC), called the convention to order at 9 a. m. on Monday, 21 March, and presented Dr. John F. Fulton, Sterling Professor of History of Medicine at Yale University, who gave the first Louis H. Bauer Lecture. The title of his talk was "Louis H. Bauer and the Rise of Aviation Medicine." Forty outstanding scientific papers were read during the following sessions, and an excellent film program was shown each day. The scientific section of the meeting was closed by a moderated panel discussion of high altitude-high speed problems, the panel comprised of six of the foremost test pilots of the United States and Canada.

The Space Medicine Association held its annual luncheon at noon on Monday, 21 March, and the Aero Medical Association's annual business luncheon was held on Tuesday noon, 22 March.

Mrs. Winfred P. Dana, President of the Wives' Wing, through her committees, held a Welcoming Tea and Fashion Show, a business luncheon, and an embassy tour for the Wing's members and their guests during the three days the men were occupied with Association business.

More than forty commercial firms occupied all available exhibit space with an array of remarkable exhibits. The Bureau of Medicine and Surgery, U. S. Navy; the Headquarters, Office of the Surgeon General, U. S. Air Force; the Royal Canadian Air Force; and the American Cancer Society had outstanding displays pertaining to aviation medicine.

Climaxing the convention was the "Honors Night" Dinner, a record number of 421 members and guests attending. The dinner was preceded by a cocktail reception sponsored by Lederle and Company. General Benson introduced distinguished guests and foreign visitors, as well as announcing award winners and this year's "Fellows" selections. The Honorable Stuart Symington, U. S. Senator from Missouri, gave the principal address, and General Benson then installed Dr. Kenneth Dowd as the incoming President of the Association. The next annual meeting of the Association will be held at the Drake Hotel in Chicago, 16-18 April 1956.

The recipients of the Association's awards are as follows:

The Raymond F. Longacre Award to Dr. Roy R. Grinker of Chicago, Illinois, for his outstanding work in psychological and psychiatric aspects of aviation medicine.

The Arnold B. Tuttle Award to Fred A. Hitchcock, Ph. D., of Ohio State University, Columbus, Ohio, for the most original research article published in the Journal of Aviation Medicine during the past two years.

The Theodore C. Lyster Award to Brigadier General Otis O. Benson, USAF (MC), for outstanding achievement in the general field of aviation medicine.

The following men were selected to "Fellows" of the Aero Medical Association"

- (1) Colonel Sheldon S. Brownton, USAF (MC)
- (2) Dr. A. Buchanan-Barbour, Medical Director, British European Airways
- (3) Captain Merrill H. Goodwin MC USN
- (4) Brigadier General Edward J. Kendricks, USAF (MC)
- (5) John P. Marbarger, Ph. D., University of Illinois
- (6) Group Captain D. G. M. Nelson (MC), Royal Canadian Air Force
- (7) Dr. Robert Rehm
- (8) Brigadier General Harold H. Twitchell, USAF (MC)
- (9) Commander Frank B. Voris MC USN

Medicin General Pierre Bergeret of the French Air Force was voted an Honorary "Fellow."

\* \* \* \* \*

"Doctors in the Sky"

by

Colonel Robert J. Benford, USAF (MC)

"Doctors in the Sky," authored by Colonel Robert J. Benford, U.S. Air Force, Medical Corps, has recently been published by Charles C. Thomas of Springfield, Illinois.

In its more than 300 pages, Colonel Benford covers every facet of organizational aviation medicine. He tells of the first attempt in 1919 to establish a professional association of flight surgeons. He follows step by step the creation of the Aero Medical Association in 1929 and its subsequent growth and success.

The book, in fact, is an exact and precise story of the Aero Medical Association, its meetings, officers, members, and branches. Each president of the Association is brilliantly biographed, and each year's officers, executive councils, and prominent members are discussed. Related

throughout the book are many little known humorous facts and incidents which lend authenticity and realism to each page. The author's ability to gather these countless facts and anecdotes is truly remarkable. In fact, much of this little known history of the beginning and growth of organized aviation medicine is printed therein for the first time.

The author discusses each annual meeting, the beginning of the Journal of Aviation Medicine, and the establishment of the Lyster, Longacre, and Tuttle Awards. There are chapters devoted to the rise of airline and civil aviation medicine and to the attainment of American Board certification through the efforts of the Association.

In the later chapters, the author relates the establishment of branch memberships, the Space Medicine Association, and the Wives' Wing. He also traces the early attendance and progressive growth of the foreign visitor contingent to the annual meetings. No pertinent fact concerning organized aviation medicine has been omitted from this book.

The narrative portion of the book is as up-to-date as tomorrow morning's newspaper. It not only discusses the most recent events, but steps into the future with biographies of the future presidents of the Association who are scheduled to hold office during the years 1955-1956 and 1956-1957.

The seven appendices to the book are as follows:

- (1) Annual meetings and presidents of the Aero Medical Association
- (2) Constitution and By-Laws of the Aero Medical Association
- (3) Honorary Members, Fellows, and Corporate Members
- (4) Physicians certified in aviation medicine
- (5) Annual awards and their recipients
- (6) Leaders in aviation medicine. This includes the listing of CAA medical directors, Chiefs of the Medical Division of Army Air Corps, Chiefs of the Aviation Medicine Division of the Bureau of Medicine and Surgery, U. S. Navy, and Commanding Officers of the U. S. Naval School of Aviation Medicine, Surgeons General of the U. S. Air Force, and Commandants of the U. S. Air Force School of Aviation Medicine.
- (7) A selected bookshelf of aviation medicine. This feature is a bibliography of 48 of the finest and most significant publications in aviation medicine.

The last feature of the book is a most complete 13-page index in which is listed each person, event, and publication mentioned throughout the volume.

From the first page of its foreword, by Dr. John F. Fulton of Yale, to the last page of its complete index, this book packs more facts and information about the members and organization of the Aero Medical Association than ever before assembled.

No one with the slightest interest in aviation medicine should fail to read this book, whether a member of the Aero Medical Association or not. Once

the reader has started this fascinating volume, there will be naught that can keep him from finishing it. Every page is filled with many facts of new and important interest. It is by far the finest chronology of organizational aviation medicine in the United States that has ever been written. No flight surgeon should admit not having read Colonel Benford's "Doctors in the Sky."

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Defects Noted on SF-88's and SF-89's Submitted to BuMed  
February and March 1955

Excess copies.....	101
Lack of copies .....	32
Item 6. Date of examination omitted .....	7
Item 15. Examining facility omitted .....	16
Item 17. Aviators flight time omitted .....	105
Item 45. Urinalysis omitted .....	6
Item 46. Chest x-ray omitted .....	17
Item 51. Obvious errors in height .....	6
Item 57. C. E. R. omitted.....	2
Item 57. Blood pressure omitted .....	4
Item 58. Pulse omitted .....	3
Item 59. Distant vision omitted.....	1
Item 60. Refraction not properly recorded .....	2
Item 60. Refraction omitted on NavCad applicants.....	15
Item 62. Heterophoria omitted in full .....	19
Item 62. Obvious errors in recording heterophoria.....	2
Item 62. Esophoria or exophoria omitted .....	2
Item 62. Left or right hyperphoria omitted .....	1
Item 62. P. D. at 13" omitted .....	21
Item 62. P. D. at 20' omitted	78
Item 62. P. C. and P. D. omitted	8
Item 63. Accommodation omitted.....	25
Item 65. Depth perception omitted .....	28
Item 66. Field of vision omitted .....	36
Item 68. Red lens test indicated but omitted .....	5
Item 69. Intraocular tension omitted .....	38
Item 70. Hearing omitted.....	7
Item 71. Audiometer omitted on NavCad applicants .....	15
Item 73. No reason given for hospitalization .....	1
Item 73. Not leaving space for BuMed endorsement .....	2
Item 73. Not enough detail on physical defects .....	8
Item 77. Failure to state aviator's service group .....	27

Items 79 through 82. No signatures .....	3
Failure to submit SF-89.....	5
Failure to evaluate on SF-89.....	11
Failure to complete item 21 on SF-89.....	12

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#### Ejection Seat Indoctrination

Those aviation physiology training units having Ejection Seat Training Devices, 6-EQ-2a, that are in need of OMIAS cards for issuing to indoctrinees who have completed the ejection seat training course, may request a supply from the Chief of the Bureau of Medicine and Surgery, Aviation Medicine Division (Code 536), Navy Department, Washington 25, D. C.

Four new ejection seat training devices will be made available to aviation physiology training units in the very near future. These four devices will bring to 16 the number in use with the Bureau of Medicine and Surgery's high altitude physiology training program.

It is to be pointed out that, as a representative of the Bureau of Medicine and Surgery, the senior medical officer of each station to which these trainers are attached is responsible for the proper utilization of these devices and is charged with the integration of this phase of aviation physiology training into the local high altitude physiology training program.

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OFFICIAL BUSINESS

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BUREAU OF MEDICINE AND SURGERY  
DEPARTMENT OF THE NAVY

PENALTY FOR PRIVATE USE TO AVOID  
PAYMENT OF POSTAGE, \$300